

IN THE CLAIMS

1. (currently amended) A method of fabricating a polysilicon film, comprising the steps of:

providing a substrate;

depositing an amorphous silicon film on the substrate by the process of physical vapor deposition;

introducing a metal catalyst to the previously deposited amorphous silicon film; and

annealing the amorphous silicon film to form a crystallized region by pure metal induced crystallization.

2. (original) The method of claim 1 further comprising the step of irradiating the crystallized region with an excimer laser after the step of annealing the amorphous silicon film.

3. (original) The method of claim 1 further comprising the step of fabricating a thin film transistor in the crystallized region.

4. (original) The method of claim 1 further comprising the step of utilizing the crystallized region in a liquid crystal display.

5. (original) The method of claim 1 wherein the amorphous silicon film is deposited using Argon as a sputtering gas, and wherein the Argon content in the amorphous silicon film after the deposition step is in the range of 2×10^{18} at/cm³ to 5×10^{21} at/cm³.

6. (original) The method of claim 1 wherein the amorphous silicon film is deposited using Argon as a sputtering gas, and wherein the Argon content in the crystallized region after the annealing step is in the range of 2×10^{18} at/cm³ to 5×10^{20} at/cm³.

7. (original) The method of claim 1 wherein the annealing step is conducted at a temperature greater than 650 °C and for a time period greater than 200 seconds.

8. (original) The method of claim 1 wherein the annealing step produces a crystallization growth front length of at least 80 μm.

9-11. (canceled).

12. (original) The method of claim 1 further comprising the step of providing a barrier layer on said amorphous silicon film wherein said barrier layer includes a

window therein for the introduction of said catalyst to said amorphous silicon film.

13-19. (canceled).

20. (currently amended) A method of fabricating a polysilicon film, comprising the steps of:

providing a substrate;

depositing an amorphous silicon film on the substrate by the process of physical vapor deposition;

in a separate step from the deposition of said amorphous silicon film, depositing a metal catalyst film on the amorphous silicon film; and

annealing the amorphous silicon film and the metal catalyst film to form a crystallized silicon film by pure metal induced crystallization, wherein the annealing step is conducted at a temperature greater than 650 °C and for a time period greater than 200 seconds and less than 800 seconds.

21. (previously presented) The method of claim 1 wherein said metal catalyst is chosen from the group consisting of aluminum, indium tin oxide, nickel, cobalt, palladium and germanium.

22. (previously presented) A method of fabricating a polysilicon film, comprising the steps of:

- providing a substrate;
- depositing an amorphous silicon film on the substrate by the process of physical vapor deposition;
- after deposition of said amorphous silicon film, depositing a metal catalyst film on selected regions of the amorphous silicon film; and
- annealing the amorphous silicon film and the metal catalyst film to form a crystallized silicon film by pure metal induced crystallization in said selected regions.